



ARDMS AE-Adult-Echocardiography Practice Questions

Shared by Holland on 09-10-2026

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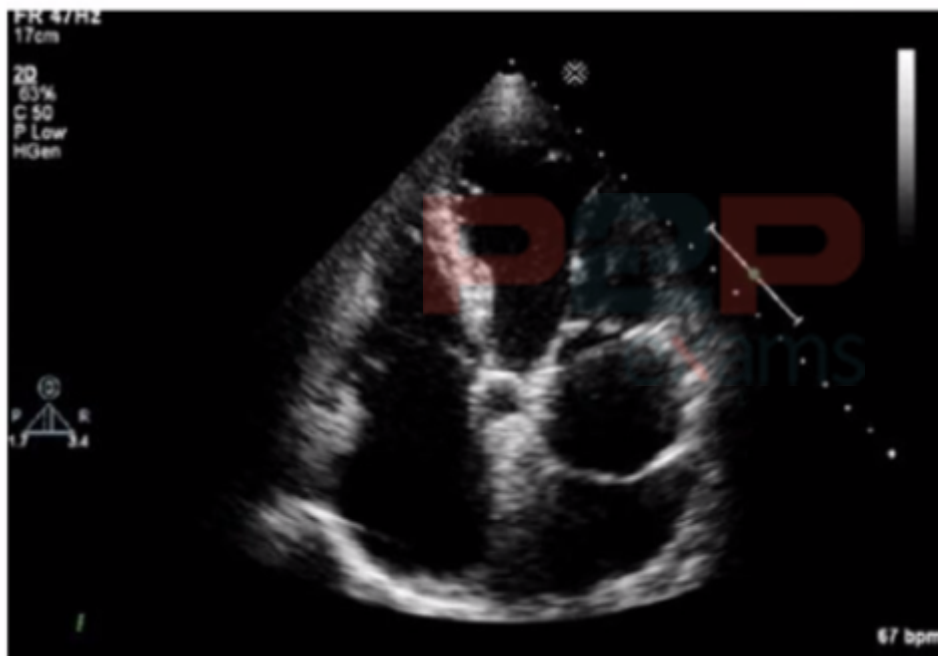
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Question 1

Question Type: MultipleChoice

Which finding is shown in this image?



Options:

- A- Chiari network
- B- Left atrial thrombus
- C- Cor triatriatum
- D- Artifact

Answer:

A

Explanation:

The echocardiographic image shows a mobile, highly echogenic, mesh-like structure within the right atrium consistent with the Chiari network. The Chiari network is an embryologic remnant of the right valve of the sinus venosus, appearing as a fenestrated, reticulated membrane that is usually thin and mobile, found near the orifice of the inferior vena cava or the coronary sinus.

This structure is benign and often an incidental finding but can be confused with thrombus or atrial tumors. Unlike left atrial thrombus, which appears as a more solid, immobile mass often located in the left atrial appendage, the Chiari network is mobile and located in the right atrium.

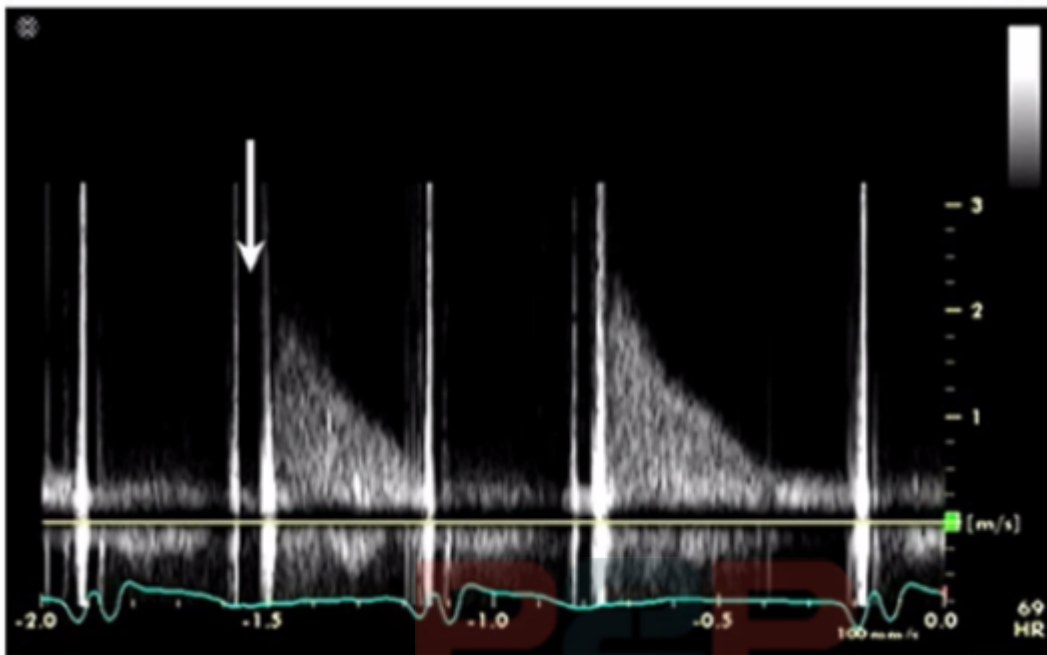
Cor triatriatum is a rare congenital membrane dividing the left atrium into two chambers and appears differently on echocardiography. Artifact refers to non-anatomic echoes which do not persist or move consistently.

Recognition of Chiari network is important to avoid misdiagnosis, and its characteristics are well described in echocardiography literature such as the 'Textbook of Clinical Echocardiography' and ASE imaging guidelines¹⁶:Textbook of Clinical Echocardiography, 6p.400-40212:ASE Guidelines on Cardiac Masses p.150-155.

Question 2

Question Type: MultipleChoice

Which phase of the cardiac cycle is indicated by the arrow on this image?



Options:

- A- Isovolumic contraction
- B- Systolic ejection
- C- Isovolumic relaxation
- D- Early diastole

Answer:

B

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

The Doppler waveform shows a typical left ventricular outflow tract or aortic valve velocity pattern. The arrow points to the steep rise and peak velocity of the jet, which corresponds to systolic ejection --- the phase of the cardiac cycle when blood is rapidly ejected from the left ventricle into the aorta.

Isovolumic contraction precedes ejection and is represented by a flat baseline with no flow as ventricles build pressure. Isovolumic relaxation occurs after ejection before the mitral valve opens. Early diastole corresponds to mitral inflow, not aortic outflow.

This timing and flow pattern are standard in echocardiographic Doppler interpretation as described in the 'Textbook of Clinical Echocardiography' and ASE Doppler imaging guidelines¹⁶:Textbook of Clinical Echocardiography, 6^{ep}.100-105¹²:ASE Doppler Guidelines^{sp}.50-55.

Question 3

Question Type: MultipleChoice

Which view is best used to evaluate a bicuspid aortic valve?

Options:

- A- Right sternal border
- B- Apical five-chamber
- C- Apical long axis
- D- Parasternal short axis

Answer:

D

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

The parasternal short axis view at the level of the aortic valve is optimal for evaluating valve morphology, including detection of bicuspid aortic valve (BAV). This view clearly visualizes the valve leaflets en face during systole.

Right sternal border and apical views provide hemodynamic information but are less optimal for detailed valve anatomy. Apical long axis is better for left ventricular and outflow tract evaluation but limited for valve leaflet number.

This is described in the 'Textbook of Clinical Echocardiography, 6e', Chapter on Aortic Valve Morphology and Congenital Anomalies20:350-355Textbook of Clinical Echocardiography.

Question 4

Question Type: MultipleChoice

How must the sonographer angle the transducer from the apical four-chamber view in order to visualize the aortic valve in the apical five-chamber view?

Options:

- A- Anteriorly
- B- Posteriorly
- C- Medially
- D- Laterally

Answer:

A

Explanation:

To obtain the apical five-chamber view from the apical four-chamber, the transducer is angled anteriorly (towards the patient's chest). This brings the left ventricular outflow tract and aortic valve into the imaging plane anterior to the left ventricle and mitral valve seen in the four-chamber view.

Posterior, medial, or lateral angulations do not adequately visualize the aortic valve in this context.

This technique is described in adult echocardiography imaging protocols and ASE chamber quantification guidelines12:ASE Imaging Protocolspp.30-3516:Textbook of Clinical Echocardiography, 6ep.70-75.

Question 5

Question Type: MultipleChoice

Based on this video, what is the estimated right atrial pressure in millimeters of mercury (mmHg)?



Options:

- A- 3
- B- 8
- C- 10
- D- 15

Answer:

C

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

The video shows a subcostal IVC view with measurement of IVC diameter and respiratory collapsibility. The IVC appears dilated (>2.1 cm) with less than 50% collapse on inspiration,

suggesting elevated right atrial pressure (RAP).

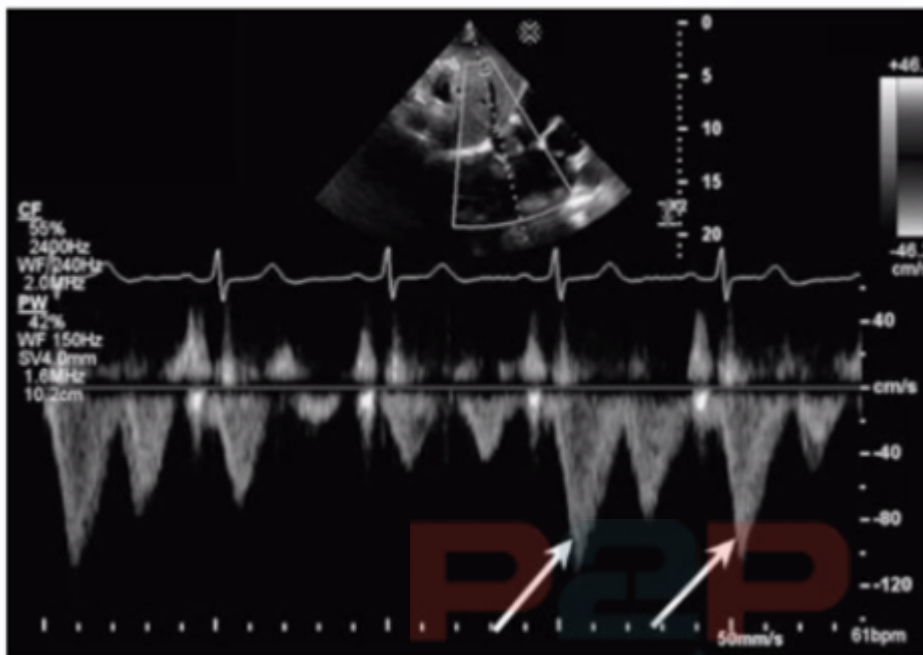
According to ASE guidelines for noninvasive RAP estimation, an IVC diameter >2.1 cm with $<50\%$ collapsibility corresponds to an RAP of approximately 10 mmHg.

Lower RAP values correspond to smaller IVC and greater collapsibility. This is a standard measurement in adult echocardiography practice and ASE chamber quantification guidelines¹²:ASE Chamber Quantification Guidelines^{p.80-85}¹⁶:Textbook of Clinical Echocardiography, 6th ed. 115-120.

Question 6

Question Type: MultipleChoice

Which flow component is indicated by the arrows on this image?



Options:

- A- Ventricular reversal
- B- Diastolic flow reversal
- C- Atrial reversal
- D- Systolic forward flow

Answer:

C

Explanation:

The Doppler waveform shows pulmonary vein flow with several components. The arrows point to small reversed flow spikes just after the atrial contraction wave, which corresponds to the atrial reversal (AR) flow component. Atrial reversal occurs as blood briefly flows backward into the pulmonary veins during atrial contraction.

Ventricular reversal is not typically seen in pulmonary veins. Diastolic flow reversal is abnormal and usually not part of normal pulmonary vein flow. Systolic forward flow is the major forward component during ventricular systole.

This interpretation is standard in ASE guidelines on diastolic function assessment and pulmonary vein Doppler evaluation¹²:ASE Diastolic Function Guidelinesp.85-9016:Textbook of Clinical Echocardiography, 6ep.130-135.

Question 7

Question Type: MultipleChoice

Which method of measuring left atrial size is most recommended and most accurate?

Options:

- A- 3D imaging and volume calculations
- B- Linear dimension in the anteroposterior plane
- C- Area by planimetry, indexed to body surface area
- D- Biplane disk summation, indexed to body surface area

Answer:

D

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

Biplane disk summation (Simpson's method) of left atrial (LA) volume, indexed to body surface area, is the most accurate and recommended method for assessing LA size. This method accounts for the asymmetrical shape of the LA and provides reproducible volume measurements.

3D imaging can provide even more precise volume data but is less widely available and less

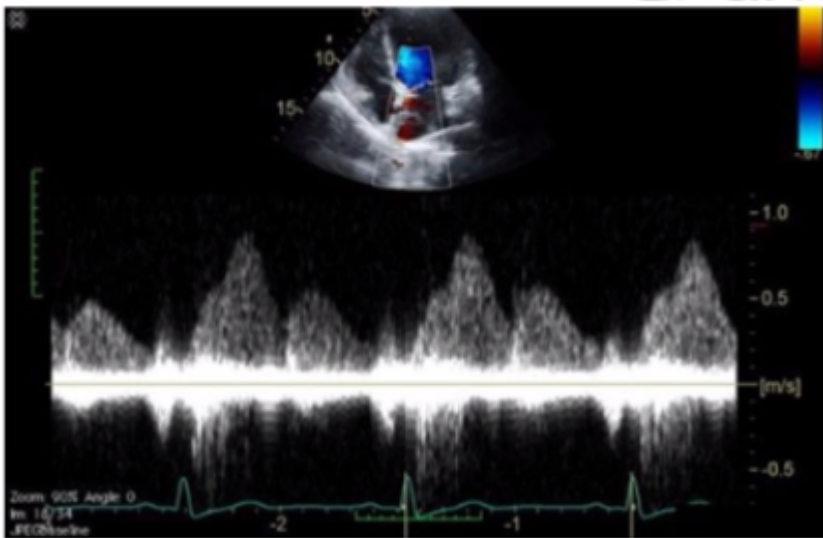
standardized. Linear dimension and planimetry are less accurate because they do not fully represent LA size.

ASE chamber quantification guidelines strongly recommend biplane volume measurement for LA size assessment in clinical practice¹²:ASE Chamber Quantification Guidelines⁹⁰⁻⁹⁵¹⁶:Textbook of Clinical Echocardiography, 6p.120-125.

Question 8

Question Type: MultipleChoice

Which of the following does this Image represent?



Options:

- A- Mitral valve inflow
- B- Tricuspid valve inflow
- C- Hepatic vein Doppler
- D- Pulmonary vein Doppler

Answer:

C

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

The image shows a pulsed-wave Doppler waveform with respiratory phasicity and distinct forward and reversed flow components characteristic of hepatic vein flow patterns. Hepatic vein Doppler typically displays a biphasic waveform with systolic (S) and diastolic (D) forward flow toward the heart and brief reversed flow during atrial contraction (A wave reversal), reflecting right atrial pressure changes.

Mitral and tricuspid inflow Doppler patterns show distinct E and A waves representing early and late diastolic ventricular filling but do not have the same flow reversal pattern. Pulmonary vein Doppler waveforms also differ, showing systolic and diastolic forward flows into the left atrium without the prominent reversed flow seen here.

The hepatic vein Doppler is commonly used in echocardiography to assess right atrial pressure and compliance, especially in conditions like constrictive pericarditis and right heart failure, where characteristic flow reversals and expiratory changes are observed.

This pattern and its clinical significance are detailed in adult echocardiography references, including the 'Textbook of Clinical Echocardiography' and ASE guidelines on Doppler imaging¹⁶:Hepatic Vein Doppler^{Textbook of Clinical Echocardiography, 6e}¹²:ASE Doppler Guidelines^{p.95-100}.

Question 9

Question Type: MultipleChoice

When utilizing contrast agents, what should the sonographer keep in mind?

Options:

- A- Anaphylactoid reactions may occur.
- B- Contrast agents produce only mild reactions.
- C- Patients with no history of allergies will not have reactions.
- D- The contrast-enhanced exam poses no risk to the patient.

Answer:

A

Explanation:

Contrast agents used in echocardiography can rarely cause anaphylactoid reactions, which are non-IgE-mediated hypersensitivity reactions that can mimic anaphylaxis. Therefore, sonographers must be prepared to manage such reactions.

Contrary to option B, reactions can be severe though rare. Even patients without prior allergies can react. It is incorrect to say the exam poses no risk; proper precautions and monitoring are essential.

These precautions are emphasized in ASE contrast echocardiography guidelines and safety protocols¹²:ASE Contrast Echocardiography Guidelinesp.190-195¹⁶:Textbook of Clinical Echocardiography, 6ep.575-580.

Question 10

Question Type: MultipleChoice

Which finding is most consistent with this M-mode image?

Options:

- A- Rheumatic mitral stenosis
- B- Mitral valve prolapse
- C- Mitral valve annuloplasty ring
- D- Systolic anterior motion of the mitral valve

Answer:

A

Explanation:

Comprehensive and Detailed Explanation From Exact Extract:

This M-mode echocardiographic image shows thickened mitral valve leaflets with a characteristic 'doming' or 'hockey-stick' appearance during diastole, which is classic for rheumatic mitral stenosis. Rheumatic mitral stenosis leads to leaflet thickening, restricted opening, and calcification, which alters the normal mitral valve motion on M-mode.

Mitral valve prolapse would show systolic displacement of the leaflets into the left atrium, typically later in systole, not doming in diastole. Mitral valve annuloplasty ring would appear as a bright echogenic line around the annulus but is not seen in this image. Systolic anterior motion (SAM) of the mitral valve is usually seen in hypertrophic cardiomyopathy and presents as anterior motion during systole, not the diastolic pattern shown.

This classical M-mode appearance is described in 'Textbook of Clinical Echocardiography, 6e', Chapter on Rheumatic Valve Disease²⁰:385-390Textbook of Clinical Echocardiography.



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